

HABITAT RESTORATION

Habitat is the setting in which particular plants or animals live, feed, find shelter, and reproduce. Plants and animals need specific types and quality of habitat to meet their particular needs. Plants need moisture, light, nutrient, temperature, and soil conditions specific to particular species. Animal habitats must provide necessary food, shelter, breeding sites, and travel corridors. Many animal species require specific plant species in their habitat. New Hampshire's estuaries provide a wealth of unique and productive habitats that support a diverse array of plant and animal populations, including threatened and endangered species. The key to protecting animal and plant species is protecting and restoring the appropriate habitats.



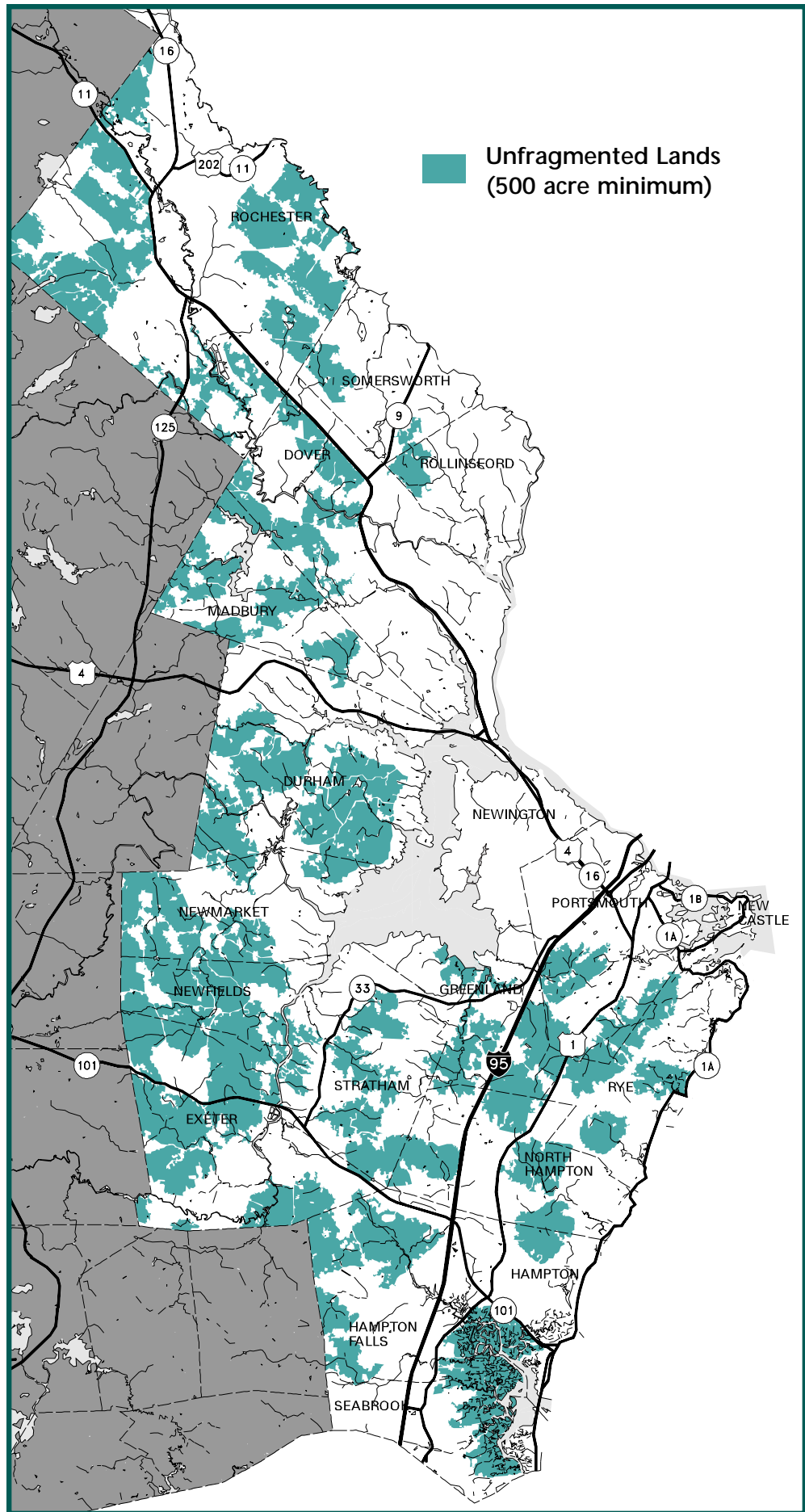
GBNERR

Great blue heron

More opportunistic species, such as raccoons, can live in a wide range of habitats – suburban and urban developments, agricultural areas, and forests. Other species, like the salt marsh-dwelling seaside sparrow, live only in one or two very specific kinds of habitat. Still other species need several very different kinds of habitats to survive. An example is the great blue heron, which nests in colonies in trees and feeds in wetlands. Extent of habitat area is also important. A meadow vole or marsh wren can survive in a very small area, but white-tailed deer or pileated woodpeckers require many contiguous acres of suitable habitat to survive and reproduce.

Natural communities are assemblages of plants and animals that occur together on the landscape in response to specific habitat conditions. Some natural communities are widespread, while others are relatively rare. The health of these mutually dependent or beneficial natural communities reflects habitat quality. Fifteen types of natural communities identified by ecologists are found in New Hampshire only in the coastal watershed.

The NHEP has identified several types of habitat that serve important ecological functions and are at greatest risk in the estuarine region. Protection of these habitats is addressed in *Chapter 5: Land Use, Development, and Habitat*



Protection. Preventing loss or degradation of habitats is the best course, but in some situations important impaired or lost habitat can be repaired or restored. *Chapter 7: Habitat Restoration* of the *Plan* addresses remedial opportunities to enhance and/or restore critical habitats as part of NHEP efforts to protect and improve water quality, fish and shellfish resources, the rich diversity of species in the estuaries, and the quality of life enjoyed by people in the New Hampshire Seacoast. The NH Coastal Program and UNH Complex Systems Research Center are using Global Information Systems information to measure and map all the various estuarine habitat types, which will help resource managers measure change in habitat over time.

Some degraded habitats in the region can be restored to increase functional values and/or available habitat area. Potential habitat restoration projects include a whole range of activities, including recreating specific habitat that has been lost; and enhancing existing habitats that have been degraded or diminished by human activity. Habitat restoration may be part of a regulatory mitigation effort designed to compensate for habitat loss due to development or other human intervention. Mitigation can also include creating habitat—such as wetlands—that did not previously exist in a specific location. Techniques for restoring habitats have been developed, studied, and refined over the last two to three decades, making restoration, and in some cases creation, of habitat a viable option in certain situations.

The NHEP has identified the greatest needs for habitat restoration and enhancement:

- shellfish habitat
- wetlands (tidal and freshwater)
- significant upland habitats

The Audubon Society of New Hampshire, Great Bay Resource Protection Partnership, the Lamprey River Advisory Committee, and other watershed and conservation groups are identifying critical habitats in the NHEP study area. This information will lead to identification of the most practical and critical opportunities for habitat restoration and enhancement efforts. Restoration of tidal marshes is the best known type of habitat restoration in the Seacoast region. The NHEP and New Hampshire Coastal Program (NHCP) have already supported several salt marsh restoration projects in the estuaries.

The USDA Natural Resources Conservation Service (NRCS), with assistance from several other organizations and agencies, published a guide to identifying salt marshes degraded primarily by the restriction of tidal waters entitled *Evaluation of Restorable Salt Marshes in New Hampshire*. NRCS is developing a second guide to assist conservation commissions and other municipal officials in identifying restoration opportunities for a number of other habitat types. The NHEP is working with the Audubon Society of New Hampshire, the NRCS, and the Town of Rye to field test this manual. This project will refine and simplify the process for communities and agencies.



WHY IT MATTERS

New Hampshire's estuaries and their watersheds support great diversity of plant and animal species. These healthy living resources in turn contribute to the overall health of the ecosystem. For example, shellfish help filter and purify estuarine waters. Estuarine habitats play critical roles as nursery, feeding, and resting areas for countless aquatic and terrestrial species. Two-thirds of New Hampshire's commercially harvested fish rely on the estuaries at some point in their lives.

These special estuarine habitats are crucial to the future survival and success of these species. As development and human uses of the watershed increase, protecting habitat area and quality is not enough. Restoring degraded habitat areas is a viable and important strategy to improve the health and integrity of the estuarine environment, and to protect and support the living resources of the estuaries.

Habitat restoration and enhancement is not just good for plants and animals. Restoring habitat is also good for people – for quality of life, recreation, economic opportunities, and more. Many residents and visitors to the New Hampshire Seacoast enjoy the excellent wildlife and bird watching, shellfishing, fishing, and hunting supported by the estuarine and upland habitats of the watershed.

The estuaries are nursery areas for commercially important fish and shellfish including lobsters, winter flounder, cod, pollack, eels, and hake. The estuaries also sustain runs of shad, alewives, and lampreys, which travel from the ocean through the estuaries to reproduce in the freshwater tributaries. The estuaries host runs of smelt to their spawning grounds at the heads-of-tide. The remarkable recovery of the striped bass is supported by summer feeding areas such as the Great Bay and Hampton-Seabrook estuaries.

New Hampshire's estuaries and associated uplands also provide significant breeding, feeding, and overwintering habitat for many species of birds, from bald eagles to marsh wrens. Thirteen state-listed threatened or endangered birds occur in the watershed. New Hampshire's coastal watershed provides important stopover habitat for migratory birds and bats using the Atlantic flyway. The Great Bay and Hampton-Seabrook estuaries provide important migration and wintering habitat for 20 species of waterfowl, 27 species of shorebirds, and 13 species of wading birds. The Seacoast is New Hampshire's primary waterfowl wintering area, with Great Bay supporting about 75% of the wintering population.

Restoration and enhancement of lost, degraded, or diminished estuarine habitats can also help accomplish or work in concert with other key goals of the NHEP – such as increasing healthy and sustainable shellfish populations, improving estuarine water quality, and protecting habitat areas through sound land- use planning.



D. DELUCA

Above: Tern restoration project on Seavey Island



A. SMITH

Left: Mussel seeding at the North Mill Pond, Portsmouth

THE CHALLENGE

Development is the leading cause of habitat degradation within the coastal watersheds. Development can cause considerable direct loss of habitat for wildlife and natural communities, plus degradation of adjacent or nearby areas. Water quality is essential to habitat value and function, and pollutants from new development can contaminate water and degrade habitat far beyond the development site. Examples of habitats affected by development include:

Shorelands and Streambanks

Shoreland development often involves clearing of vegetation, which removes the shoreland's natural ability to filter pollutants, shade the water, prevent soil and bank erosion, and provide habitat and travel corridors for a wide range of species. Increased impervious surfaces can lead to dramatic increases in volume and velocity of runoff to surface waters. Such increases often lead to severe streambank erosion, which in turn causes the same types of negative impacts as elimination of shoreline vegetation. Examples of shoreland restoration projects in coastal New Hampshire include bank revegetation in North Mill Pond in Portsmouth, and erosion control and bank stabilization along the Piscataqua River in Dover.

Salt Marshes

Development adjacent to salt marshes often results in reduced salinity of water and soil, either through increased freshwater runoff from impervious surfaces, or through restricted tidal flow from undersized culverts and/or filling. Reduced soil salinity encourages the growth of invasive species such as *Phragmites*. In 1994 approximately 20% of New Hampshire's remaining salt marshes were affected by tidal restrictions. Many of these tidal-restrictions have been or are being addressed through culvert replacements and other marsh restoration techniques in Rye, Hampton, Seabrook, Stratham, and other locations. Opportunities to restore salt marshes affected by freshwater runoff or negative impacts other than tidal restrictions may remain to be identified.

*Salt marsh restoration:
culvert replacement in
Stratham*



NHCP



Eelgrass Beds

Eelgrass beds or meadows form subtidal and intertidal seagrass habitats which cover the greatest area of all habitat types in the Great Bay Estuary. Eelgrass habitats are important as breeding and nursery grounds for finfish, shellfish, and other invertebrates, and as feeding grounds for many fish, invertebrates, and birds. Eelgrass stabilizes bottom sediments, and may also filter nutrients, suspended sediments, and contaminants from estuarine waters.

Eelgrass wasting disease (caused by the myxomycete *laburinthula sp.*) was first recognized in Great Bay in the 1940s. In the late 1980s wasting disease caused dramatic eelgrass declines in the Great Bay Estuary, arousing great concern into the early 1990s. However, historical eelgrass beds have made an impressive recovery of acreage and densities, and new beds have been observed in areas previously devoid of eelgrass. While overall the resource is improving, recovery of lost eelgrass areas has been significantly slower in Little Bay.

Development and recreation threaten eelgrass beds, too. Boat propellers and mooring chains cause physical disruption, docks shade the sunlight, and degraded water quality damages eelgrass beds. In certain cases restoration is required as compensatory mitigation for wetland impacts, such as the expansion of the Port of New Hampshire facility in Portsmouth Harbor. Eelgrass restoration efforts have been conducted at several sites in the Great Bay Estuary, including Little Bay where beds killed by the wasting disease have not recovered in over 10 years, and the Bellamy River. Rye Harbor is another recent eelgrass bed restoration site.

Shellfish Beds

The oyster resources of the Great Bay Estuary have declined in recent years. Oysters in the Salmon Falls and Piscataqua rivers were severely affected by the MSX disease, suffering mortalities of 25%-83% in 1995. This disease outbreak likely affected oyster populations throughout the Great Bay Estuary, but test information indicates other areas of the estuary were not affected as severely as the Salmon Falls and Piscataqua rivers. Oysters in the Great Bay Estuary (Adams Point and Nannie Island) showed signs of infection, but no mortalities were found. However, these beds and others have declined in density and acreage. The cause is not clear, but siltation, predators, or other factors may have played a role. UNH CICEET is planning an oyster bed restoration project in the Salmon Falls River, one of the areas most severely affected by the MSX disease.

Anadromous Fish

A dam marks the head of the tide in nearly every tributary of the Great Bay Estuary. Prior to the installation of fish ladders, populations of several species of fish suffered from the dams blocking access to their breeding grounds. Some breeding grounds were degraded by shoreline erosion, sedimentation, and poor water quality. Fish ladders and stocking programs, in concert with water quality improvement programs, are now commonly used to rebuild some of these populations, although it is thought that commercial ocean fishing may be limiting the success of some restoration efforts.

REGULATORY AND MANAGEMENT PROGRAMS

Mitigation is a process required in federal environmental regulations for major public and private development projects that have impact on legally protected environments, most commonly wetlands. Mitigation involves avoiding, minimizing, and then compensating for impacts. When estuarine or coastal habitats are affected by such development, habitat restoration is preferred over habitat creation as a mechanism of compensatory mitigation.

Federal wetland policy stems from Section 404 of the Clean Water Act which requires permits for dredging and filling activities in wetlands. Permit applications are coordinated and issued by the US Army Corps of Engineers (ACOE), with review by several federal agencies including EPA, US Fish & Wildlife Service, and the National Marine Fisheries Service. A 1990 Memorandum of

Agreement (MOA) between EPA and ACOE established a national goal of “no net loss” of wetlands. A prioritized, three-step policy was established to achieve the “no net loss” goal. Permit applicants must:

- Avoid impacts or investigate alternative sites;
- Reduce and minimize impacts; and finally
- Replace the functions and values of the habitats affected by the development through compensatory mitigation.

Federal wetland regulatory programs are coordinated with state wetland programs, led by the NH DES Wetlands Bureau. All projects in salt marshes are considered major and must go through the federal permit process regardless of size. Mitigation includes creation, restoration, enhancement, and preservation, and projects may combine these options. On-site mitigation is preferred to off-site wherever possible.

Mitigation is not required for “minimum impact” or “minor” projects, and is only sometimes required for major projects. A 1997 study of New Hampshire wetland permits and mitigation projects found only 20% of major project permits required mitigation, and the success rate of wetland mitigation projects was not high.



*Sandy Point Salt Marsh:
pre-restoration*

Still, mitigation requirements for development and public works projects such as road construction that affect wetlands offer opportunities to restore or enhance lost or degraded tidal and freshwater wetland habitats in the coastal region.

Because roads and bridges cause many of the restrictions to tidal flow in salt marshes (and other wetland degradation), routine road repair and maintenance work at both local and state levels can provide opportunities to restore and enhance wetland habitats. Plans for repair, replacement, and new construction should be monitored to limit further impact on tidal and freshwater wetlands.

Wetland restoration projects, especially in tidal waters, must also go through the rigorous wetland review and permitting process, and require cooperation among all participating agencies and landowners.

EPA published new regulations on December 8, 1999 for Phase II of the NPDES permit stormwater management program. Compliance with these Phase II rules will be required by March 2003. Under Phase II rules, NPDES permit coverage will be required for small municipal separate storm sewer systems in urbanized areas—including Dover, Durham, Madbury, New Castle, Newington, Portsmouth, Rochester, Rollinsford, Rye, and Somersworth. Phase II NPDES stormwater rules will also apply to discharges from construction sites disturbing between one and five acres.

Clean Water Act Section 303(d) and its implementing regulations require states to list water body segments as impaired if they fail to comply with a water quality goal or use (such as fishing or swimming) even after targeted pollution control practices have been put into place. The Clean Water Act requires that this impaired waters list include a prioritized ranking of segments most in need of Total Maximum Daily Load (TMDL) analysis. The TMDL defines the maximum amount of a specific pollutant that can be discharged into a body of water without violating water quality goals for that water. NPDES permits and state wastewater discharge licenses are written to be consistent with the TMDL waste load allocations for the receiving water body. TMDLs are being developed and implemented for the Rochester segment of the Cocheco River for dissolved oxygen, and for the Salmon Falls River downstream of Somersworth for dissolved oxygen and phosphorous.

*Sandy Point Salt Marsh:
post-restoration
at high tide*



NHCP

GOAL FOR RESTORING HABITATS

The NHEP has one chief goal for restoration of valuable habitats in the estuaries and the estuarine watersheds. See *Appendix 3* Habitat Protection and Restoration Goals, Objectives, and Strategies for a complete list of goals and objectives. The Action Plans for habitat restoration offer several ways for agencies, communities, and landowners to work together to:

- Maintain habitats of sufficient size and quality to support populations of naturally occurring plants, animals, and communities.

HABITAT RESTORATION ACTION PLANS

Shellfish Restoration

- RST-1 Develop and implement a plan for shellfish resource enhancement and habitat restoration activities to achieve a sustainable resource contributing to a healthy environment. 7-13

Wetland Restoration (tidal)

- RST-2 Using the Coastal Method and other techniques, identify and restore additional restorable tidal wetlands. 7-14
- RST-3 Continue to restore the restorable tidal wetlands listed in the Natural Resources Conservation Service report, *Evaluation of Restorable Tidal Marshes in New Hampshire*. 7-17

Habitat Restoration

- RST- 4 Identify and implement habitat restoration projects in other important non-tidal habitat areas, such as uplands and freshwater wetlands. 7-19

Wetland Restoration

- RST-5 Create a list of potential wetland restoration projects that could be used for wetland mitigation projects, and distribute the list to state agencies, US Fish & Wildlife Service, and Seacoast municipalities. 7-21
- RST-6 Pursue restoration funding from the NH Department of Transportation, US Department of Agriculture/National Resources Conservation Service, US Fish and Wildlife Service, and other sources. 7-23



ACTION RST-1

Develop and implement a plan for shellfish resource enhancement and habitat restoration activities to achieve a sustainable resource contributing to a healthy environment.

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SHELLFISH
RESTORATION

See Action SHL-8.

ACTION RST-2

Using the Coastal Method and other techniques, identify and restore additional restorable tidal wetlands.

BACKGROUND

Restoring tidal wetlands is consistent with the objectives of numerous state, regional, and international initiatives addressing significant habitat types. Salt marshes are important beyond their borders because they serve as nursery grounds for fish and as a source of primary productivity for near-shore areas. Both the NH Coastal Program (NHCP) and the Gulf of Maine Council on the Marine Environment list salt marsh restoration among their objectives. The Global Programme of Action Coalition (GPAC) recently endorsed salt marsh restoration as one of its major interests.

In its 1994 report entitled *Evaluation of Restorable Salt Marshes in New Hampshire*, the USDA Natural Resources Conservation Service identified all the tidal restrictions which may be causing salt marsh degradation. The report documented a list of tidal restrictions, typically undersized culverts, that were adversely affecting the state's salt marshes. Since the report was published, more than half of the restrictions have been removed, helping to restore marsh function and health. These restorations are continuing at a rapid pace and most of the practical restoration sites list in the report will be completed within the next few years.

The next challenge is to continue the momentum of restoration activities and restore marshes degraded by factors other than tidal restrictions. Especially desirable are projects that take an integrated approach to look at tidal restrictions, stormwater inflow, invasive species, waterfowl habitat, mosquito control, and historical resources.

The NRCS publication is the main reason NH has been able to leverage millions of dollars to eliminate tidal restrictions. That document allows anyone to see which projects are available. The document helped US Fish & Wildlife Service (USFWS) obtain and apply funds from the Natural Resource Damage Assessment Program, which is dedicated to purchasing and protecting habitat near Superfund sites, along the Little River in Hampton. The NHCP used it to direct competitive grant funds, and NRCS used it to access the Wetland Reserve Program.

A similar document is now needed for other types of restoration. An educational campaign is needed to get more people thinking about restoration opportunities, both proactively and as mitigation. Funds are needed to support restorations and the long-term monitoring required to evaluate the success of projects.



ACTIONS/ACTIVITIES

- 1 Identify additional restorable tidal wetlands, focusing on those affected by factors other than tidal restrictions – such as fresh-water runoff, invasive species, filling, excavation, and disposal of dredged material. Methods to accomplish this task include using the Coastal Method in all communities, aerial photograph evaluation, and field examination. Shoreline surveys can be used to look for stormwater inflow and invasive species. Talking with local historians and long-time residents can help identify where salt marshes occurred in the past. Prepare a report that identifies and explains degraded salt marsh locations.
- 2 Local, state, and federal agencies and organizations will work to restore sites determined to be good candidates for tidal wetland restoration. Communities and other implementers should pursue several options to restore the identified sites. In addition to seeking traditional funding sources (NHCP, EPA, USFWS, NRCS, etc.), the identified potential restoration sites can be proposed as candidates to satisfy mitigation requirements, or be completed as public works projects occur in the area.

RESPONSIBLE PARTIES

NRCS as the lead to develop the report (Step 1), with development and report promotion assistance from EPA, US Army Corps of Engineers, NHCP, US Fish & Wildlife Service, UNH/Jackson Estuarine Laboratory, regional planning commissions, Conservation Districts, Conservation Commissions, volunteer groups, UNH Sea Grant, Project SERVE, and landowners (Step 2).

IMPLEMENTATION LOCATION

Tidal wetland locations throughout the 17 New Hampshire tidewater communities should be assessed during implementation of this action.

COSTS

Project Identification in Step 1	\$50,000-100,000
Report production in Step 1	\$10,000
Restoration activities in Step 2	millions
Coastal restoration specialist to coordinate projects and pursue funding in Step 2 (per year)	\$50,000

FUNDING

Step 1 of this project will be funded in part by NHCP in the 2001 field season. This project may also be funded in small part with federal USEPA-NHEP implementation funds, USFWS Partners for Fish and Wildlife and Natural Resource Damage Assessment programs, NOAA Coastal Services Center funds, USGS Assistance to State Water Resources Research Institutes, or through other federal programs identified in Tables 10.1 to 10.6 of this document.

REGULATORY NEEDS

None identified.

EXPECTED BENEFITS

Restored and enhanced salt marsh habitat and function.

MONITORING AND ENFORCEMENT

Monitoring restoration success should be part of each restoration project, following guidelines currently being developed by the NH Coastal Program and other coastal NH organizations.

TIMETABLE

INitiate in 2001

PRIORITY



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High Priority. Implementation of this action is not dependent on implementation of other actions listed in the *NHEP Management Plan*.

ACTION RST-3

Continue to restore the restorable tidal wetlands listed in the Natural Resources Conservation Service report, *Evaluation of Restorable Tidal Marshes in New Hampshire*.

PRIORITY

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WETLAND
RESTORATION
(TIDAL)

BACKGROUND

In 1994 the USDA Natural Resources Conservation Service published a report, *Evaluation of Restorable Tidal Marshes in New Hampshire*. The report documented a list of 31 tidal restrictions, typically undersized culverts, that were adversely affecting the state's salt marshes. Coastal municipalities, state agencies, NRCS, U.S. Fish & Wildlife Service, and others have aggressively pursued funding to restore salt marsh sites listed in the report. The NH Coastal Program reports that of the 31 sites in 2000:

- 15 tidal restrictions have been eliminated
- 4 projects are in the planning or restoration process
- 6 restoration projects are possible but difficult
- 6 restrictions are probably permanent

Projects thought to be difficult, or sites where degradation of a wetland habitat is considered permanent, may be due to proximity of houses and flooding potential, current recreational use of the former salt marsh site, high cost, etc.

ACTIONS/ACTIVITIES

Pursue planning and restoration funds for the remaining restorable tidal wetland (including freshwater tidal wetlands) sites, approximately 300 acres, listed in the NRCS report that are deemed practical and have not yet been restored. In most cases this involves:

- 1 Investigate and/or monitor the site to determine the post-restoration potential for flooding of nearby properties, collect data where needed to design a restoration methodology that involves more than just removing a tidal restriction, etc.
- 2 Restore the site as needed by removing some or all tidal restrictions, removing any fill, ditching, creating open water areas, transplanting salt marsh vegetation, etc.
- 3 Post-restoration monitoring is critical to determine the success of the effort, and to collect information that can help refine restoration techniques for future projects. Data collected typically include pore-water salinity and pH; mapping of vegetation; surveys of birds, fish, and other animals using the area, etc.

RESPONSIBLE PARTIES

NRCS and the NH Coastal Program (Steps 1-3), in partnership with several coastal municipalities, have taken the lead in encouraging restoration of these sites, providing technical assistance to design site restoration plans, and providing funding to conduct the work. These agencies should continue in these roles. Agencies such as the US Fish and Wildlife Service, US EPA, US Army Corps of Engineers, NH Estuaries Project, and others should also continue to assist municipalities and landowners in restoring these habitats.

IMPLEMENTATION LOCATION

Tidal wetland locations identified in the 1994 NRCS document, *Evaluation of Restorable Tidal Marshes in New Hampshire*.

COSTS

Costs vary greatly from site to site, ranging from a few thousand dollars to hundreds of thousands of dollars. Planning, restoration, and some monitoring is often accomplished within the range of \$40,000-80,000 per project.

FUNDING

NHEP will apply \$50,000 of implementation funds to Steps 1-3 in 2001-2002. Other funding sources include USFWS Partnership for Fish and Wildlife and Natural Resource Damage Assessment programs, or other federal programs identified in Tables 10.1 to 10.6 in the *NHEP Management Plan*. State funds available through natural resource management agencies such as NH DES and NH OSP will also support this action. Local funds or in kind contributions toward the project may also be appropriate, especially for post-restoration monitoring (Step 3).

REGULATORY NEEDS

None identified.

EXPECTED BENEFITS

Restored salt marsh acreage and enhanced wetland and habitat value and function.

MONITORING AND ENFORCEMENT

No enforcement required, though both pre- and post-restoration monitoring of the site should be pursued.

TIMETABLE

Three salt marsh restoration projects were conducted during the NHEP Planning phase. Additional projects will be initiated in 2001-2002.

+++ PRIORITY

Highest Priority. Implementation of this action is not dependent on implementation of other actions listed in the *NHEP Management Plan*.



ACTION RST-4

Identify and implement habitat restoration projects in other important non-tidal habitat areas, such as uplands and freshwater wetlands.

PRIORITY

HABITAT
RESTORATION

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BACKGROUND

Many previous efforts to identify habitat restoration projects have focused on tidal habitats, particularly salt marshes. Considerable opportunities for restorations of other habitat types include freshwater wetlands, rivers, streams, lakes, riparian, and terrestrial habitats. A joint effort combining the knowledge of the local conservation commission and other interested citizens with the habitat restoration expertise from agencies and organizations can best identify a list of sites that would benefit from some form of restoration. The USDA/Natural Resource Conservation Service is developing a method to assist communities interested in exploring restoration opportunities, and field-testing it in the town of Rye with help from the New Hampshire Estuaries Project and Audubon Society of New Hampshire.

ACTIONS/ACTIVITIES

- 1 Review the NRCS document for publication and to expand understanding and interest in using the method. Solicit input from town of Rye on the effectiveness of this approach.
- 2 Assist two communities each year in analyzing restoration opportunities.
- 3 Create a habitat restoration project funding database.
- 4 Complete at least one restoration project per year.

RESPONSIBLE PARTIES

The USDA Natural Resource Conservation Service will lead implementation (Steps 1-4) assisted by New Hampshire Estuaries Project, New Hampshire Coastal Program, US Fish & Wildlife Service, UNH Cooperative Extension, and the Audubon Society of New Hampshire.

COSTS

Review and publication in Step 1	\$20,000
Community assistance in Step 2	\$8,000/ town
Database in Step 4	no cost
Restoration projects in Step 4	unknown at this time

FUNDING

This action (Steps 2-4) may be funded through US EPA NHEP implementation funds; Step 1 cannot be funded with this money. Other possible funding sources include the New Hampshire Coastal Program grant program, USDA Wildlife Habitat Incentive Program, and the USFWS Partners for Fish and Wildlife Program and Natural Resource Damage Assessment Program.

REGULATORY NEEDS

None required.

EXPECTED BENEFITS

- Publication of a peer-reviewed document for municipalities to use to identify habitat restoration opportunities will have benefits beyond the coastal zone and beyond state boundaries.
- A list of restoration opportunities in the estuarine watersheds for use by federal, state, and local officials.
- Information to assist local communities in obtaining funding to undertake restoration projects.
- Restoring habitats of many types (rivers, lakes, terrestrial, etc.) will benefit a wide range of fish and other wildlife, and improve the ecological function and value of wetlands, etc.

MONITORING AND ENFORCEMENT

Monitoring restoration success should be a part of each project, following guidelines currently being developed by coastal New Hampshire organizations.

TIMETABLE

Initiate by 2005.

PRIORITY

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High Priority. Implementation of this action is not dependent on implementation of other actions listed in the *NHEP Management Plan*, although it will help in the implementation of Action LND-11.

ACTION RST-5

Create a list of potential wetland restoration projects that could be used for wetland mitigation projects and distribute the list to state agencies, US Fish & Wildlife Service, and Seacoast municipalities.

PRIORITY

WETLAND
RESTORATION

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BACKGROUND

Although conservation commissions can request mitigation on any wetlands project, this rarely happens because NH DES does not usually suggest mitigation except for large projects, and it is only expressly required on projects in particularly valuable wetlands (e.g., those designated as Prime Wetlands through the local/state designation process outlined in state statute). Identifying and promoting mitigation opportunities might result in more wetlands being protected.

The NH Department of Transportation (NH DOT) is aware of mitigation and is somewhat used to providing for mitigation. The U.S. Fish & Wildlife Service's Natural Resource Damage Assessment (NRDA) Program uses Superfund settlement money to purchase, protect, and restore habitat near Superfund sites. NRDA funds have been used along the Little River in Hampton and are a possible funding source for additional restoration work in the estuarine and coastal watersheds. Mitigation may involve freshwater wetlands, salt marsh, and eel grass beds.

ACTIONS/ACTIVITIES

- 1 Increase the amount of wetland restoration performed as mitigation in the coastal area by providing information to and developing long-term agreements between NH DOT and other state agencies.
- 2 NH DES would work primarily with NH DOT to develop a list of potential wetland mitigation sites (freshwater wetland, salt marsh, eelgrass) for distribution and outreach to agencies, conservation commissions, and wetland permit applicants.
- 3 Use GIS (geographic information systems) technology to identify and illustrate potential sites in the seacoast.
- 4 Monitoring of restoration work will be conducted to ensure long-term success.

RESPONSIBLE PARTIES

NH DES would be the lead agency (Steps 1-4), assisted by NHCP, NH DOT, Rockingham and Strafford Conservation Districts, and local conservation commissions. NH DES Wetlands Bureau GIS staff could coordinate the GIS work. With a better database system, the present Wetlands Bureau staff could also track the mitigation projects (Step 3).

IMPLEMENTATION LOCATION

This action may be implemented in any or all of the 43 towns in the Great Bay and coastal watersheds.

COSTS

GIS services to digitize all sites in Step 3	\$20,000
Distribute this information to the agencies and towns in Steps 1-2	\$10,000
Total	\$30,000

FUNDING

Projects may be funded through US EPA NHEP implementation funds, USFWS Partners for Fish and Wildlife and Natural Resources Damage Assessment programs, or through other federal programs identified in Tables 10.1 to 10.6 in the *NHEP Management Plan*. State funds will be available through natural resource management agencies such as NH DES and NH OSP. Local funds or in kind contributions from participating communities may also be applied to project costs.

REGULATORY NEEDS

None identified.

EXPECTED BENEFITS

Increased restoration of wetlands through the regulatory wetland mitigation process.

MONITORING AND ENFORCEMENT

NH DES Wetlands Bureau and/or individual permit applicants would be responsible for monitoring mitigation success.

TIMETABLE

Initiate by 2005. Opportunities to implement this High Priority action will be pursued in the next four years as funds and resources become available.



PRIORITY

High Priority. Implementation of this action is not dependent on implementation of other actions listed in the *NHEP Management Plan*.

ACTION RST-6

PRIORITY

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WETLAND
RESTORATION

Pursue restoration funding from the NH Department of Transportation, US Department of Agriculture/National Resources Conservation Service, US Fish and Wildlife Service, and other sources.

BACKGROUND

Recent interest in wetland restoration has led to identification of many potential projects, and will likely lead to identification of still more projects. Funding is needed to take advantage of these restoration opportunities. NH DOT is especially relevant due to wetland mitigation requirements for road and bridge construction.

ACTIONS/ACTIVITIES

- 1 Pursue restoration funding from the EPA, NH DOT, USDA/NRCS, US F&WS, NOAA, et al. Seek traditional and non-traditional sources of funding for projects identified in RST-5. The new TEA-21 program through the U.S. Department of Transportation is a potential source of funds.
- 2 Keep funding sources informed of potential restoration opportunities, and make sure project proponents are aware of and understand the various funding sources.

RESPONSIBLE PARTIES

NH DES will pursue funding with assistance from NHEP (Step 1). Proponents and practitioners of salt marsh and other wetland restorations will pursue sources of funding (Step 2).

COSTS

DES or NHEP staff time to approach funding agencies and write grants. This could be part of the coordinator position identified in Action RST-2.

FUNDING

Projects may be funded through US EPA NHEP implementation funds, USFWS Partners for Fish and Wildlife and Natural Resources Damage Assessment programs, or other federal programs identified in Tables 10.1 to 10.6 in the *NHEP Management Plan*. State funds may be available through natural resource management agencies such as NH DES and NH OSP.

REGULATORY NEEDS

None identified.

EXPECTED BENEFITS

Increased number and acreage of salt marshes restored, resulting in improved salt marsh and other wetland health, function, and habitat.

MONITORING AND ENFORCEMENT

None required.

TIMETABLE

This Highest Priority action will be initiated by 2004.

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PRIORITY

Highest Priority. Implementation of this action is not dependent on implementation of other actions listed in the *NHEP Management Plan*, but would be pursued most effectively along with, or after completion of Action LND-10.